REMARKS

This is intended as a full and complete response to the Office Action dated December 22, 2005, having a shortened statutory period for response set to expire on March 22, 2006. Please reconsider the claims pending in the application for reasons discussed below.

Claims 11-13, 15-18, and 21-28 remain pending in the application and are shown above. Claims 11-13, 15-18, 21, and 23-28 are rejected. Claim 22 is objected to. Reconsideration of the rejected claims is requested for reasons presented below.

Claims 17 and 25 have been amended to more clearly recite the claimed subject matter. Applicants submit that the changes made herein do not introduce new matter.

Claims 11-13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chiang, et al.* (U.S. Patent No. 5,817,572) in view of *Sugahara, et al.* (U.S. Patent No. 5,989,998). The Examiner states that *Chiang, et al.* teaches a method of forming interconnect structures including providing a substrate (320) having a contact (321) formed therein, depositing a first dielectric layer (322) on said substrate, forming an etch stop layer (323) on said first dielectric layer (322), forming a second dielectric layer (350) on said etch stop layer (323), forming a photoresist layer (352) on said second dielectric layer (350), and using said photoresist layer to form a contact hole (351) in said second dielectric layer (350), wherein said first dielectric layer (322) and said second dielectric layer (350) may include any suitable dielectric material or materials including silicon dioxide, silicon nitride, silicon oxynitride, phosphosilicate glass, borophosphosilicate glass, fluoropolymer, parylene, polyimide, any suitable spin-on glass, or any suitable spin-on polymer, and further forming a third dielectric layer (395) over said second dielectric layer (column 13, line 27-column 16, line 9). The Examiner acknowledges that *Chiang, et al.* fails to teach using a low dielectric constant material that is an oxidized organosilane layer. The Examiner notes that *Sugahara, et al.* teaches a method of depositing on a substrate a plurality of layers, wherein one or more of the layers is a low dielectric constant oxidized organosilane layer comprising carbon, and asserts that it would have been obvious to combine the teachings of *Chiang, et al.* and *Sugahara, et al.* to enable forming the SOG layer in *Chiang, et al.* as taught by *Sugahara, et al.* for the advantage of forming a film with improved film formability and

cost efficiency (*Sugahara, et al.*, column 3, lines 25-30). Applicants respectfully traverse the rejection.

Applicants agree that *Sugahara, et al.* asserts that the insulating layers provided therein, which are formed by plasma CVD rather than a SOG method, have improved properties compared to conventional organic SOG films (column 3, lines 25-30, column 10, lines 16-21). However, Applicants respectfully submit that replacing *Chiang, et al.'s* SOG dielectric material with *Sugahara, et al.'s* insulating layer which is formed by plasma CVD does not provide or suggest all of the elements recited in claim 11. Claim 11 recites a method that includes depositing both a layer selected from the group consisting of parylene, FSG, and silicon oxide layers and one low dielectric constant oxidized organosilane layer comprising carbon. *Chiang, et al.* describes forming a stack of layers including dielectric layer 322 and dielectric layer 350 and teaches that both dielectric layer 322 and dielectric layer 350 may be any suitable dielectric material or materials including silicon dioxide, silicon nitride, silicon oxynitride, phosphosilicate glass, borophosphosilicate glass, fluoropolymer, parylene, polyimide, any suitable spin-on glass, or any suitable spin-on polymer. The only specific combination of dielectric layers 322 and 350 that *Chiang, et al.* teaches is a silicon oxide layer 322 and silicon oxide layer 350 (column 21, lines 24-26). Applicants respectfully submit that *Chiang, et al.*, individually or in combination with *Sugahara, et al.*, does not teach or suggest depositing a plurality of layers including the particular combination of one parylene, FSG, or silicon oxide layer and one low dielectric constant oxidized organosilane layer comprising carbon or an organic SOG film to be replaced with *Sugahara, et al.'s* insulating layers which are formed by plasma CVD.

Thus, Applicants respectfully submit that *Chiang, et al.* in view of *Sugahara, et al.* does not teach, show, or suggest a method comprising depositing on a substrate a plurality of layers, wherein the plurality of layers comprises one low dielectric constant oxidized organosilane layer comprising carbon, wherein the low dielectric constant oxidized organosilane layer is deposited in a plasma enhanced process from a mixture comprising an organosilane compound and an oxidizing gas and the carbon content of the low dielectric constant oxidized organosilane layer is from 1% to 50% by atomic weight, a layer selected from the group consisting of parylene, FSG, and silicon oxide

layers, and a top layer of the plurality of layers that is a photoresist, as recited in claim 11. Applicants respectfully request withdrawal of the rejection of claim 11 and of claims 12-13, which depend thereon.

Claims 15-18, 21, and 23-28 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Chiang, et al.* (U.S. Patent No. 5,817,572) in view of *Matsuura* (U.S. Patent No. 6,124,641). The Examiner acknowledges that *Chiang, et al.* fails to teach using a low dielectric constant material that is an oxidized organosilane layer. The Examiner states that *Matsuura* teaches depositing a low dielectric constant layer in a plasma enhanced process from a mixture comprising methylsilane and/or dimethylsilane and an oxidizing gas (column 4, line 17-column 6, line 65). The Examiner asserts that it would have been obvious to combine the teachings of *Chiang, et al.* and *Matsuura* to enable using the dielectric layer of *Matsuura* in *Chiang, et al.* for the advantage of preventing forming a poisoned via in a resulting insulating film (*Matsuura*, column 2, lines 57-64). Applicants respectfully traverse the rejection.

Chiang, et al. is discussed above. *Matsuura* describes depositing insulating films by chemical vapor deposition using methyl silane and hydrogen peroxide (column 8, lines 12-23). Applicants respectfully submit that there is no motivation or suggestion in *Matsuura* to use a plasma enhanced deposition process to form the insulating films described therein. As neither *Chiang, et al.* nor *Matsuura* teaches or suggests depositing a low dielectric constant oxidized organosilane layer comprising carbon in a plasma enhanced process, *Chiang, et al.* and *Matsuura*, individually or in combination, do not provide or suggest all of the limitations of claim 15. Applicants respectfully request withdrawal of the rejection of claim 15 and of claims 16-18, 21, and 23-28, which depend thereon.

Applicants further traverse the rejection of dependent claim 26, which recites that the oxidizing gas that is used to deposit the low dielectric constant oxidized organosilane layer is O_2 or N_2O. Applicants respectfully submit that the only oxidizing agent that *Matsuura* describes for depositing the carbon-containing insulating films described therein is hydrogen peroxide (column 8, lines 12-20). *Matsuura* describes using N_2O with silane to deposit an oxide film but does not teach or suggest using O_2 or N_2O as an oxidizing gas to deposit a low dielectric constant oxidized organosilane layer

comprising carbon. Applicants further submit that *Chiang, et al.*, individually or in combination with *Matsuura*, does not teach or suggest using O_2 or N_2O as an oxidizing gas to deposit a low dielectric constant oxidized organosilane layer. Applicants respectfully request withdrawal of the rejection of claim 26.

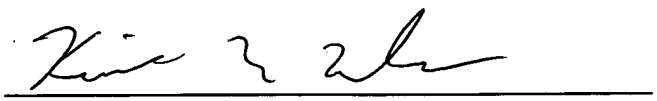
Claim 22 is objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants submit that claim 22 is also patentable for the reasons discussed above with respect to claim 15, upon which claim 22 depends. Applicants respectfully request withdrawal of the objection to claim 22.

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

The secondary references made of record are noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, Applicants believe that a detailed discussion of the secondary references is not necessary for a full and complete response to this office action.

Having addressed all issues set out in the office action, Applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



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